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ABSTRACT

The primary purpose of the project was to develop cost-effectiveness materials to be used in conducting locally directed secondary school vocational education program investigations. Based on a literature review, eight key elements in the cost-effectiveness system were identified and a conceptual model and data instruments for cost-effectiveness analysis for secondary vocational programs were developed. (These are published as a separate technical report.) This work resulted in an administrator's manual conceived as a self-instructional guide. (The manual is published as a separate document.) The model, data instruments, and the manual were examined by research and evaluation experts and vocational administrators. The development of the cost-effectiveness analysis model included (1) specification of program objectives, (2) identification of output indicators, (3) delineation of cost analysis, (4) presentation of mathematical formulas for computing cost-effectiveness measures, (5) presentation of five types of data instruments and forms, and (6) delineation of standard procedures for using the cost-effectiveness system. (Author/HD)

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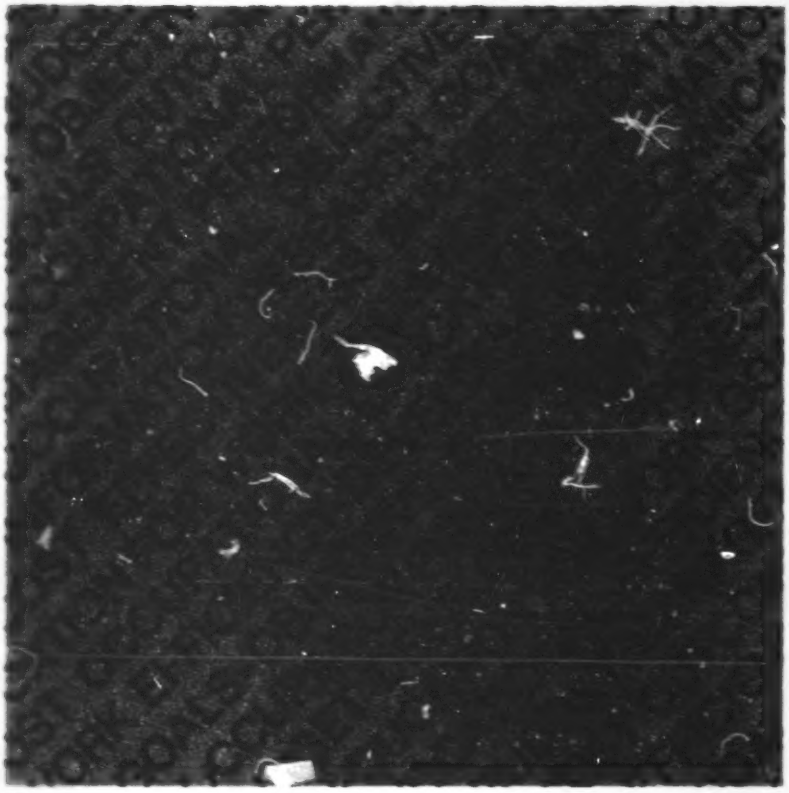
ED130083

Final Report

COST-EFFECTIVENESS MATERIALS FOR LOCALLY CONDUCTED SECONDARY SCHOOL VOCATIONAL EDUCATION PROGRAM INVESTIGATIONS



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Project No. SBVTE 8-75-C-5
Vocational Education Program Area
School of Education, Indiana University
Bloomington, Indiana
June 1976

INDIANA STATE BOARD OF VOCATIONAL AND TECHNICAL EDUCATION
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ABSTRACT

Purpose. The primary purpose of the project was to develop cost-effectiveness materials to be used in conducting locally directed secondary school vocational education program investigations. The primary objectives were to synthesize existing cost-effectiveness concepts and research literature into a conceptual model for use in cost-effectiveness analyses of secondary vocational programs, and to develop an administrator's manual for guiding step-by-step activities in conducting cost-effectiveness studies using the model and data instruments.

Procedures. A review of related literature of cost-effectiveness provided a basis for conceptualizing the analysis as a program planning, and evaluation technique. Eight key elements in the cost-effectiveness system were identified. Based upon the elements, a conceptual model and data instruments for cost-effectiveness analysis for secondary vocational programs were developed. Standard procedures for using the model and data instruments were delineated. This work resulted in an administrator's manual conceived as a self-instructional guide involving three major activities. The model, data instruments, and the manual were examined by research and evaluation experts and vocational administrators.

Products. The development of the cost-effectiveness analysis model includes (1) specification of program objectives, (2) identification of output indicators, (3) delineation of cost analysis, (4) presentation of mathematical formulas for computing cost-effectiveness measures, (5) presentation of five types of data instruments and forms, and (6) delineation of standard procedures for using the cost-effectiveness system. The administrator's manual provides a summary of the cost-effectiveness system and step-by-step activities for planning, and implementing, cost-effectiveness and utilizing the results of the study.

Budget and Expenditure Digest

Cost-Effectiveness Materials for Locally Conducted
Secondary School Vocational Education
Program Investigations

Item	Total Fund Budgeted	Expenditures	Balance
Direct Costs			
Personnel	$24,658.00[1]	$24,229.97	$ 428.03
Contractual Services	5,800.00	3,150.44	2,649.56
Employee Benefits	1,993.00	1,573.48	419.52
Travel	2,468.00	2,154.26	313.74
Supplies & Materials	800.00	670.10	129.90
Communications	400.00	87.12	312.88
Properties	600.00	35.00	565.00
Facilities	---	---	---
Product Production and Dissemination	2,434.00	2,434.00	---
Project Evaluation	---	---	---
Indirect Costs	15,818.00[2]	13,871.09[3]	---
Total	54,971.00	48,205.46	4,818.63[4]

(1) Part C Funds Granted by the Indiana SBVTE

(2) University Funds 40.4%

(3) University Expenditures Matched on Basis of Direct Costs

(4) Balance of Part C Funds Returned to SBVTE

INFORMATION SHEET

A. Kind of Project: (check one)

1	___ Experimental	4	___ Demonstration
2	_X_ Developmental	5	___ Evaluative
3	___ Pilot	6	___ Exemplary

B. Population

TYPE		NUMBERS (affected by project)
A	Disadvantaged	A _____
B	Handicapped	B _____
C	Migrant	C _____
D	Minority	D _____
E	Combination of the above	E 15,000
F	Other _____	F _____

GROUP		
1	Pre-school	1 _____
2	Elementary	2 _____
3	Junior High School	3 _____
4	Middle School	4 _____
5	Senior High School	5 120,000
6	Postsecondary	6 _____
7	Adult	7 _____
8	University	8 _____
9	Employer	9 _____
10	Employee	10 _____
11	Citizens	11 _____
12	Parents	12 _____
13	Combination of the above _____	13 _____

LOCALITY (check the one which encompasses the locality involved)

a	National	a _____
b	State	b _X_
c	Region	c _____
d	District	d _____
e	County	e _____
f	Area	f _____
g	Community	g _____
h	School Corporation (LEA)	h _____

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Cost-Effectiveness Materials For Locally Conducted Secondary School Vocational Education Program Investigations

This report is a brief description of the system and products of the cost-effectiveness project developed at Indiana University; it includes 1) a statement of objectives, 2) a statement of the problem, 3) priority area, 4) strategies for accomplishing the objectives, 5) findings, 6) evaluation, 7) conclusions, 8) financial statement, and 9) supplemental and reference materials.

Objectives

The project's primary objective was to develop a system by which local program administrators would be able to conduct their own cost-effectiveness analyses as bases for planning and operating decisions. The project's specific objectives were:

1. Synthesize, from existing cost-effectiveness research literature, an application of cost-effectiveness systems to Vocational Technical Education at the secondary level.

2. Establish program objectives which secondary level vocational education programs can use in cost-effectiveness analyses.

3. Delineate input and output data needs.

4. Develop a system for conducting locally directed cost-effectiveness analyses which would include 1) a system for providing overall planning and operation of the system, 2) instructional outlines for conducting necessary procedures, 3) instruments for collecting data, and 4) analysis procedures for interpreting the data.

5. Publish documents which would report all of the products developed in the preceding four objectives.

Statement of the Problem

Since Bulletin Number 66-3 on Program-Planning-Budgeting was issued in 1965 (Executive Office of the President, 1965), increasing numbers of governmental offices and educational institutions are being asked to develop means to evaluate and account for their programs and procedures. This trend to require a rational framework for education programs has begun to focus on economic aspects of the organization and operation. The basis for decisions about a program's objectives and output measures are now frequently expressed in economic terms.

With research money provided by the Vocational Education Act of 1963 and the Vocational Education Amendments of 1968, considerable analytical work in cost-benefit and cost-effectiveness has already been conducted in Vocational Education. The most extensive documentation of cost-effectiveness studies published to date is Review and Synthesis of Cost-Effectiveness Studies in Vocational Technical Education (Stromsdorfer, 1972). An analysis of it shows that 1) an extensive number of studies in Vocational Education and related areas, such as manpower and economic opportunity programs, have been conducted, 2) the majority of cost-effectiveness research has been conducted by third party evaluators, and 3) the instrumentation, objective identification, and analytical techniques can and should be synthesized into operational procedures which can be readily used by local practioners.

Because there is a serious lack of skill among educators, administrators, and directors of Vocational Education programs in their use of cost-effectiveness assessment techniques, existing terminology and procedures should be translated into useable materials for them. Locally

directed planning and evaluation of Vocational Education is desirable, and it can be more effectively managed if decision making is based on cost-effectiveness analysis information.

Priority Area

The project was, in part, a response to a research mandate from the state of Indiana. The project proposed to develop "a transportable cost-effectiveness approach to program planning, evaluation and budgeting for the local level in planning more effective Vocational Education programs," which was called for by Item 3 in the July 4, 1974 Request for Proposals in the state project titled, "Implementation of a State-wide Guidance Program with Emphasis on Counseling, Placement, and Follow-up for Selected Target Groups."

The project is also a response to a professional need. The applicability of cost-effectiveness procedures and research techniques to secondaty vocational technical education programs has already been substantiated by several significant research studies: Abt, 1969; Alkin, 1970; Hu, Et al 1969; Kaufman and Lewis, 1968; Knezevich, 1973, and Stromsdorfer, 1972. These studies provide comprehensive information, include instrumentation for application of cost-effectiveness procedures to Vocational Education, and provide the basis for developing analytical procedures appropriate for use in local school settings. They show that cost-effectiveness, when applied to local school settings and used on a continuing basis by vocational administrators, can play a large part in the decision-making strategy. The cost-effectiveness method can become important components of future program budgeting systems because they have the potential to provide a criterion for planning and evaluation, by which objective decisions

can be made regarding the optimum use of resources.

This state request and the rationale provided by professional studies for the feasibility of using cost-effectiveness in schools clearly support a project which could develop appropriate procedures for administering locally directed cost-effectiveness evaluations. Furthermore, it appeared clear that there was need for three criteria to guide the development of locally directed cost-effectiveness systems: 1) the procedures and instrumentation had to be within the skill and resource capability of the administrator controlling the secondary vocational education program; 2) the system had to be sufficiently flexible to adapt to a variety of secondary school settings, and 3) the system had to lend itself to becoming a component of the overall planning and decision making strategy of the schools.

Strategies

The project was headquartered at Indiana University, in the Vocational Education Program Area and made use of the university's library resources and ERIC Document Service. The staff consisted of the director, Dr. Jin E. Kim, the principle investigator, Dr. Robert C. Harris, a research associate, Mr. Don D. Ruby, two graduate assistants, and secretaries (Appendix A). Complementing the project staff was a National Advisory Panel, composed of vocational directors who are potential users of the system, a teacher educator-researcher, the executive director of the State Advisory Council, and a member of the State Board of Vocational Technical Education staff (Appendix C). Mr. Dick Wysong of the State Board of Vocational Technical Education was the project monitor. Considerable interaction among these personnel occurred during the developmental process.

All phases of the project had objectives, which included one or more

major task(s), and activities by which the tasks were achieved.

OBJECTIVE 1 Synthesize, from existing cost-effectiveness research literature, an application of cost-effectiveness systems to Vocational Technical Education at the secondary level.

Task 1:1 Distinguish between cost-benefit, cost-effectiveness and program-planning-budgeting systems.

Task 1:2 Develop a cost-effectiveness model appropriate to decision making for planning and evaluating secondary vocational education programs.

Activity: A review of literature related to cost-effectiveness analysis was completed and eight key elements in the cost-effectiveness system were identified. Cost-effectiveness analysis was distinguished from the concept of cost benefit analysis but related to Planning, Programming, Budgeting Systems. A number of research studies on cost analysis, cost-benefit analysis, and cost-effectiveness analysis of vocational secondary programs were reviewed and the need for cost-effectiveness analysis of vocational programs explored.

Based upon the literature review, a conceptual model for cost-effectiveness analysis for secondary programs was developed.

The tenative model was reviewed in three meetings of the State Advisory Committee and in two meetings of the National Advisory Panel. Recommendations from these two bodies were incorporated in the model and resulted in the final product which is described below (Appendix D and E).

OBJECTIVE 2 Establish program objectives which secondary level vocational education programs can use in cost-effectiveness analysis.

Task 2:1 Identify vocational education objectives.

Task 2:2 Develop goal statements for quantifying vocational education objectives.

Activity: Seven vocational education objectives were identified by means of a review of the Indiana State Plan and of vocational technical education's professional literature. Goal statements were developed which consisted of subsets of the objectives stated in quantifiable terms. After the objectives and goal statements were tentatively drafted, the State Advisory Committee reviewed the objectives and statements on three occasions. The Committee's recommendations were incorporated into the final product of objectives and goal statements (Appendix F).

OBJECTIVE 3 Delineate input and output data needs.

Task 3:1 Identify types of data needed in the cost-effectiveness system.

Task 3:2 Develop a data system for use in the cost-effectiveness model.

Activity: To identify types of data needed, a review was conducted of educational information systems and accounting systems, including national, state and local agency concepts and materials. School personnel were interviewed, the materials used in school systems were obtained and analyzed, discrepencies in systems were noted, and a synthesis of the data systems was developed. The resulting system produced five unique data systems appropriate for cost-effectiveness analysis. To develop a data system for the model, follow-up strategies used in research studies were reviewed, and cost-effectiveness research studies were analyzed for their types and interpretive systems. A tentative system was developed and reviewed with the National Advisory Panel and the State Advisory Committee, and recommendations were incorporated in the final model and instrumentation system.

OBJECTIVE 4 Develop a system for conducting locally directed cost-effectiveness analysis which would include 1) a system for providing overall planning and operation of the system, 2) instructional outlines for conducting necessary procedures, 3) instruments for data collection, and 4) analysis procedures for interpreting the data.

Task 4:1 Develop a management system.

Task 4:2 Write a cost analyses.

Task 4:3 Write goal output statements.

Task 4:4 Develop instructions.

Task 4:5 Develop analytical procedures.

Activity: The project staff translated the cost-effectiveness model into a management activities schedule((Appendix G). The schedule resulted in a PERT chart which included an identification of major activities to be completed by administrators as they conduct the cost-effectiveness investigation (Appendix H). After completing the activity schedule, specific instructions, forms, and procedures were delineated and submitted as tentative drafts to be analyzed by advisory committee members and other school corporation officers. Hypothetical school data were used to validate the instruments. The validation process resulted in major revisions to the tentative instrument drafts and produced a simplified instrumentation system adaptable to all school corporations at the secondary level.

OBJECTIVE 5 Publish a document which would report all of the products in the preceeding four objectives.

Task 5:1 Write a technical report.

Task 5:2 Write an administrator's manual.

Task 5:3 Write a final report.

During the developmental process records were maintained of

literature reviews, investigations of costing systems, investigations of follow-up systems, an analysis of research studies, and validation information obtained from the Advisory Committee and the National Advisory Panel. Using these materials, a technical report outlining the review of the literature and the development of the conceptual model was written and designed for researchers and practitioners of cost-effectiveness investigations. An administrator's manual was written that incorporated 1) key questions about cost-effectiveness, 2) elements of the cost-effectiveness model, 3) instructions, 4) key tasks, and 5) necessary forms for conducting the investigation. All elements of the administrator's manual were coordinated by an indexing system. A final report outlining the scope of the project was written.

Findings

The project's staff produced a model, which requires specific types of data; a set of procedures, by which the cost-effectiveness studies can be effected, and an administrator's manual. These are described below.

Rationale: Cost-effectiveness analysis was defined as an analytical tool for assessing outcomes of operating programs and possible alternative programs in terms of their abilities to achieve specified objectives in relation to their costs. The review of related literature identified eight elements for cost-effectiveness analyses: 1) program or alternative, 2) program objectives, 3) cost, 4) output, 5) model, 6) effectiveness measures, 7) efficiency measures, and 8) a cost-effectiveness ratio and a performance ratio. By contrasting the measured goal attainment of vocational programs against measured costs, cost-effectiveness analysis

is operationally distinguished from cost-benefit analysis but related to PPBS. As an analytical technique, cost-effectiveness analyses increases the potential of the PPBS system by providing decision makers with specific costs and their relationship with a program's effectiveness in achieving its stated objectives.

Cost-effectiveness analysis of vocational education programs can be used as a means of optimizing the allocation and use of resources. As a method for program evaluation, cost-effectiveness analysis may be used to develop new programs as well as to evaluate existing vocational programs. For program planning purposes the analysis is needed to maximize the efficiency of resources and to produce a high level of effectiveness at the lowest possible cost. Furthermore, as the demand and supply of vocational programs increases, the need for cost-effectiveness analysis of vocational programs can be used to justify additional public support.

Model: The cost-effectiveness model, which is based upon 1) student input, 2) objectives, 3) vocational programs, 4) budgeted costs, 5) outputs, 6) actual costs, 7) non-economic benefits, 8) economic benefits, 9) community demand, and 10) community support, produces two primary measures: 1) an effectiveness index and 2) an efficiency index. The efficiency index is the relationship of budgeted costs to actual costs per unit outcome. The effectiveness index is a relationship of planned objectives to actual output. A comparison of these measures results in two ratios: a cost-effectiveness ratio and a performance ratio.

System: The system is based upon an objective system composed of seven primary objectives: 1) completion of students from vocational programs, 2) completion of special students from vocational programs, 3) satisfaction with occupational preparation, 4) participation in student

leadership activities, 5) satisfaction with guidance and counseling services, 6) fulfillment of labor market requirements and community manpower needs, and 7) preparation of graduates from secondary vocational programs for advanced education. Outputs are measures as actual attainments of those goal statements.

Costs include both direct and indirect costs. Direct costs include salaries of teaching staff, fringe benefits for teaching staff, travel costs for instruction, costs of supplies and materials, costs of classroom and laboratory facilities, and equipment and building use costs. Indirect costs which are prorated in all areas include student services, instructional staff services, general administration, school administration, business services, and central services.

Instruments: Based upon the specified data types needed for the cost-effectiveness model a set of five data collection instruments was developed: 1) school corporation or district information, 2) secondary vocational instructional program data, 3) student follow-up data, 4) employer opinion of vocational training of employees, and 5) vocational instructional program cost data.

Procedures: The three phase system includes seven primary stages: 1) determine purposes of a cost-effectiveness analysis, 2) identify appropriate resources, 3) develop a study plan, 4) collect required data, 5) compute cost-effectiveness measures, 6) prepare a study report, and 7) utilize the results for program evaluation, program development and program planning.

Manual: The administrator's manual was designed as a handbook for independent use by local administrators in conducting cost-effectiveness investigations within their own school. The design of the system aimed

to: 1) be adaptable to any school within the state of Indiana, 2) be simple enough to be used within local school investigations, 3) provide the option to investigate any programs in vocational technical education in the system, and 4) provide concise information that could be interpreted by vocational administrators. The manual, which is organized around a series of questions, describes briefly cost-effectiveness analysis, orients administrators to its general tasks, and provides them with a step-by-step description of the entire system and its procedures. The handbook phase of the manual includes 1) identification and description of the task to be completed, 2) instructions for completing the task, 3) identification of key personnel responsible for completing the task, and 4) all forms necessary for data collection, tabulation, and interpretation.

The manual is organized into three phases. Phase I, which includes planning for cost-effectiveness analysis, includes: 1) the identification of needs or anticipated information from the analysis, 2) definition of the scope of the analysis, 3) specification of the purposes of the analysis, 4) organization of a study team and/or advisory committee, 5) identification of financial resources, 6) design of the cost-effectiveness study, and 7) development of a time schedule. Phase II incorporates six items: 1) determination of program objectives and target goals, 2) collection of program output and follow-up data, 3) analysis of costs of vocational programs, 4) computation of program effectiveness measures, 5) computation of cost efficiency measures, and 6) computation of the cost-effectiveness and performance ratios. Phase III, which describes the utilization of results, incorporates: 1) interpretating the results, 2) drafting conclusions and recommendations, 3) writing of a report, 4)

using the results for program evaluation, 5) using the results for program development, and 6) applying the results to program planning.

The manual provides administrators with a step-by-step discription of procedures and materials necessary for conducting the cost-effectiveness analysis of local secondary education vocational schools. The technical report, which provides a review of the literature, development of the orientation of the model, and an analysis of the computation of formulas, is designed to facilitate an interpretation of this system by researchers and administors.

Evaluation

During the project's development, techniques were used which could provide a formative evaluation of the project: 1) The self evaluation instrument of the research coordinating unit, which notes key characteristics of a project during its operation, was used to assess the on-going developmental strategies and progress of the project. 2) Project personnel met with the project monitor to provide periodic reports of progress. 3) The State Advisory Committee was a panel of experts which also served as a panel to periodically review the project's progress. The Advisory Committee was in a unique position to judge the relevance of the products being produced. 4) The National Advisory Panel served as evaluators who assessed the degree to which the cost-effectiveness concept and the model being developed were consistent with the theoretical models in cost-effectiveness and with research conducted to date. 5) A third party evaluator employed by the research coordinating unit and the State Board of Vocational Technical Education reviewed quarterly reports and met with the project staff to review the progress of the project.

The five techniques used to provide the process evaluation assured that the project remained on schedule and that the forthcoming products were consistent with the objectives specified in the proposal and the procedures outlined in the plan of action.

Conclusions and Recommendations

The project has been successful in developing a model for conducting secondary level cost-effectiveness investigation materials for the management of vocational technical education programs. The model provides information for decision makers relative to evaluation, program planning, and the development and utilization of resources. Elements of the model have been outlined in two documents for state and national dissemination. These documents, a technical report designed for researchers and an administrators manual designed for conductors of the investigations, provide a thorough outline of the model and steps to be taken in conducting investigations. The procedures developed in the administrator's manual are consistent with the available school data and accounting system used in the state of Indiana.

The system provides a step-by-step sequence to be followed and includes all necessary forms and materials for conducting investigations. The materials developed in the program are adaptable to school management and should be employed in vocational education program planning, evaluation, and operation. The model and materials developed are suitable for local school administrators without the use of a researcher or third party investigator.

Recommendations: The adoption of these materials should be encouraged at the earliest possible date. The materials are appropriate and

available to researchers who wish to conduct cost-effectiveness investigations of secondary vocational education programs. Researchers employed as third party investigators will also find the materials developed in this project useful.

The materials were validated against hypothetical school data in Indiana; thus, a field investigation of the materials is needed. In addition to providing a careful analysis of forms, procedures and adaptability to a variety of school settings, a field investigation would provide baseline data upon which further investigations could be pursued.

Although the adoption of this system is critical to improved management of vocational programs, in-service education may be the key to its eventual comprehensive use because administrators who are unfamiliar with it may be reluctant to use it. Since the materials are sufficiently sophisticated to require an orientation for administrators, the State Board of Vocational Technical Education is encouraged to conduct training sessions and invite school personnel who express an interest in adopting the system.

The cost-effectiveness model and system developed in the project has the potential for improving the decision making process concerning the development and operation of vocational education programs. While future research may well improve the model and system, this initial effort provides administrators with a manageable investigative technique.

References

Abt, Clark C. "Design for an Education System Cost-Effectiveness Model," in OECD. Efficiency in Resource Utilization in Education. Paris: OECD, 1969, pp. 65-91.

Alkin, Marvin C. "Evaluating the Cost-Effectiveness of Instructional Programs," in M. C. Wittrock and David E. Wiley, ed., The Evaluation of Instruction: Issues and Problems. New York: Holt, Rinehart and Winston, Inc., 1970, pp. 221-238.

Executive Office of the President, Office of Management and Budget. Social Indicators: Selected Statistics on Social Condition and Trends in the United States. Washington, D.C.: Government Printing Office, 1973.

Hu, Teh-Wei, and Others. A Cost Effectiveness Study of Vocational Education. Final Report, University Park: Pennsylvania State University, March 1969 (ED 029093, VT 007453).

Kaufman, Jacob J. and Morgan V. Lewis. The Potential of Vocational Education: Observations and Conclusions. University Park, Pennsylvania, May 1968.

Knezevich, Stephen J. Program Budgeting (PPBS). Berkeley, Calif.: McCatchan Publishing Corporation, 1973.

State Board of Vocational and Technical Education, "Implementation of a Statewide Guidance Program with Emphasis on Counseling Placement, and Follow-up for Selected Target Groups," Request for Proposals, Unpublished Document, Indianapolis, Indiana: SBVTE, 1974.

Stromsdorfer, Ernst W. Review and Synthesis of Cost Effectiveness Studies of Vocational and Technical Education. ERIC Information Series No. 57, The Center for Vocational and Technical Education, The Ohio State University, 1972.

Appendix

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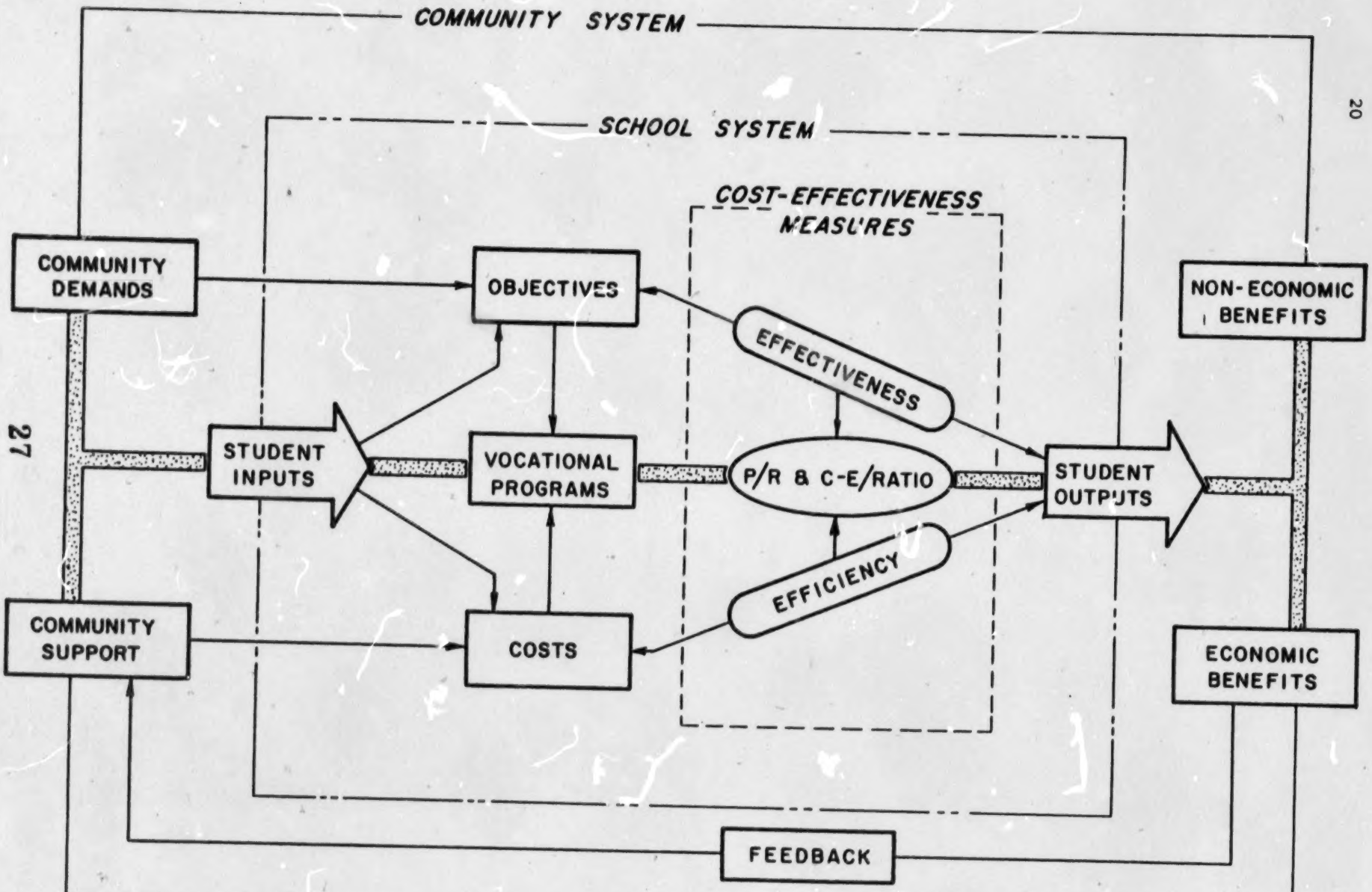
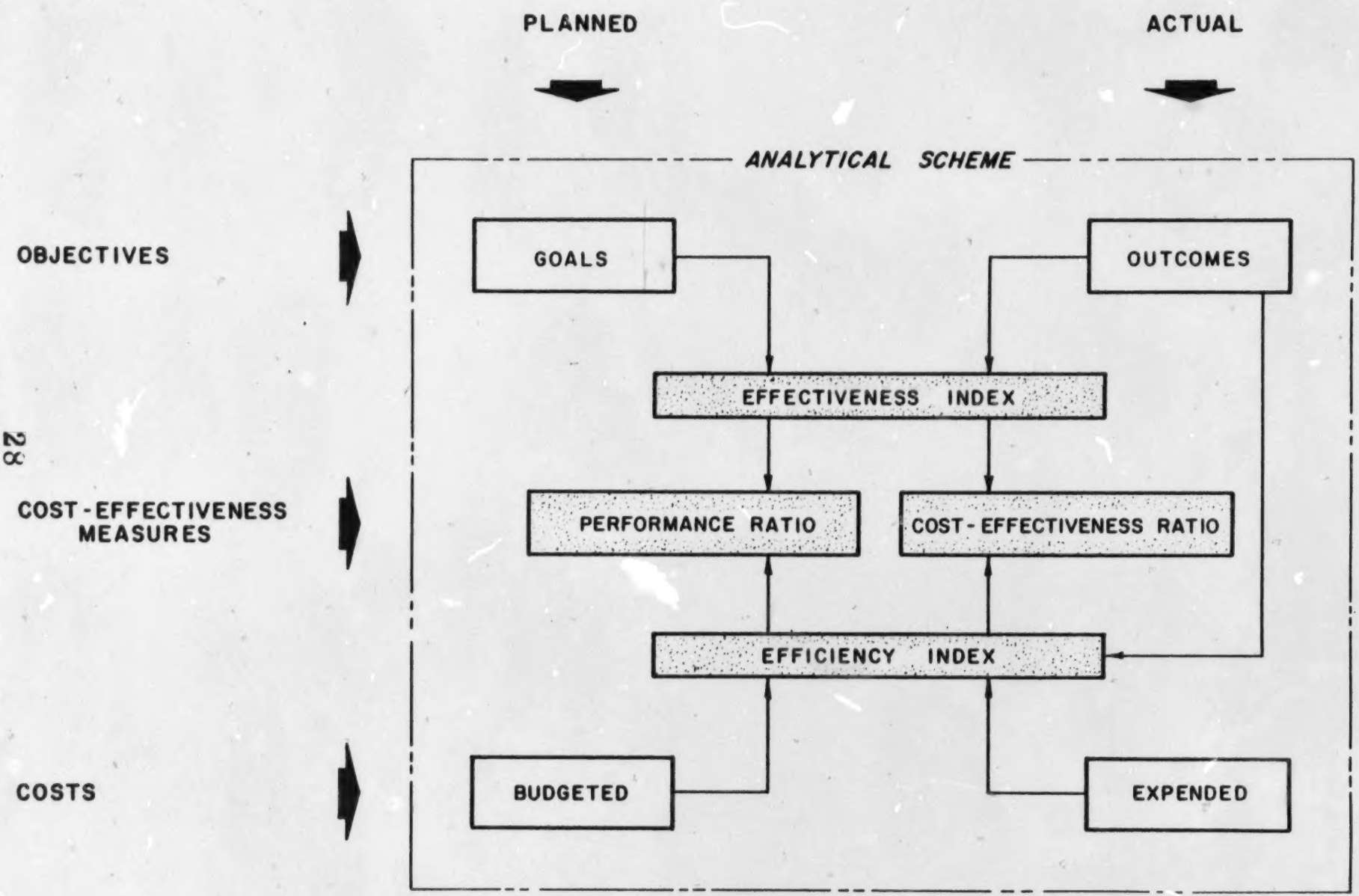


APPENDIX D

THE COST-EFFECTIVENESS ANALYSIS MODEL
FOR SECONDARY VOCATIONAL PROGRAMS



APPENDIX E

ANALYTICAL SCHEME FOR COST-EFFECTIVENESS MEASURES

APPENDIX F

PROGRAM OBJECTIVES AND TARGET GOALS

OBJECTIVE 1. *Aid students enrolled in vocational education to successfully complete a secondary occupational program.*

1-a. _____ percent of the student population will be enrolled in the secondary vocational program during the 19__ - 19__ school year.

1-b. _____ percent of the students will complete the program requirements.

1-c. _____ percent of the student completions will have on the job occupational experience.

1-d. _____ percent less dropout rate will occur in the vocational program than the total dropout rate for the entire school.

1-e. _____ percent of the student completions will rate their program as satisfactorily meeting their educational goals.

1-f. _____ percent of the student completions will indicate they would recommend their vocational program to other students.

OBJECTIVE 2. *Assist special student groups to successfully achieve in a secondary vocational program.*

2-a. _____ percent of the persons identified as special education students will be enrolled in the vocational program (mainstream).

2-b. _____ percent of the disadvantaged students will be enrolled in the vocational program.

2-c. _____ disadvantaged persons (economically and/or educationally) will complete the secondary vocational program.

2-d. _____ disadvantaged students (economically and/or educationally) will participate in work-study programs.

2-e. _____ handicapped persons (physical and/or mental) will successfully complete the secondary vocational program.

2-f. _____ exceptional youth will complete the secondary vocational program.

2-g. _____ percent of the students enrolled will represent the sex minority in those programs traditionally considered sex-stereotyped.

6-d. _____ employers will value the vocational program as a source of trained manpower.

6-e. _____ employers will indicate that the employees' vocational preparation was critical in the employment decision.

6-f. _____ employers will rank the employees' skill and knowledge level at a minimum of fairly skilled or above.

6-g. _____ employers will indicate job advancement is related to training received in the vocational education programs.

6-h. _____ employers will rate the employees on the job maturity factors at a minimum mean of good or above.

OBJECTIVE 7. *Encourage vocational graduates to continue their education after completion of their secondary program.*

7-a. _____ percent of the students who complete the vocational program will be enrolled in advanced study programs.

7-b. _____ percent of the students enrolled in advanced study programs will be in the same program specialty as their secondary vocational program.

7-c. _____ percent of the students enrolled in advanced study programs will be in their specialization or programs which they considered related to their secondary vocational program.

7-d. _____ percent of the students enrolled in advanced study programs will rate their secondary vocational program as instrumental in their decision to continue their education.

7-e. _____ percent of the students enrolled in advanced study programs will indicate their vocational program prepared them for their pursuit of advanced study.

2-h. _____ percent of the students classified in special student groups who can benefit from a related or enabling skills course will be enrolled in such courses.

2-i. _____ percent of the students enrolled in related or enabling skills courses will attain minimum competencies in order to benefit from vocational or preparatory programs.

2-j. _____ percent of the students classified in special student groups will rate their vocational program as satisfactorily meeting their educational goals.

2-k. _____ percent of the special student group completions will indicate they would recommend their vocational program to other students.

OBJECTIVE 3. *Provide vocational education for secondary school youth in accordance with their occupational preparation.*

3-a. _____ percent of the students available for and having sought employment will be employed full-time in less than fifteen weeks after graduation. (Consider military and apprenticeships as employed)

3-b. _____ percent of the graduates available for and having sought employment in their specialization will be employed in their specialization in less than fifteen weeks after graduation. (Include military and apprenticeships if in the area of specialization)

3-c. _____ percent of the graduates available for employment will be employed in their specialization or in a position they considered related to their area in less than fifteen weeks after graduation. (Include military and apprenticeships if in specialization or related area)

3-d. _____ percent of the enrollees who terminate schooling before completing program requirements will find their first full-time job in the occupation for which they were being trained or a related area. (Include military and apprenticeships if in specialization or related area)

3-e. _____ percent of the graduates of any licensed occupation program (who apply and take) will pass the appropriate examination.

3-f. _____ percent of the students responding on a follow-up study will indicate they are satisfied with their job.

3-g. _____ percent of the students employed six (6) months after graduation will indicate that their skill preparation was adequate for their present job.

3-h. _____ percent of the graduates will indicate they were adequately prepared to work with supervisors, co-workers and subordinates.

OBJECTIVE 4. *Provide leadership development activities for students enrolled in vocational programs through a youth organization functioning as an integral part of the vocational instruction.*

4-a. _____ percent of the students enrolled in the vocational program will have taken an active part in (youth organization, i.e., VICA, FFA, FHA, etc.) activities for the school year.

4-b. _____ percent of youth organization participants will rate the activities as meeting their needs and interests.

OBJECTIVE 5. *Provide guidance and counseling services (career development) information appropriate to continued education or employment for students enrolled in vocational programs.*

5-a. _____ vocational students will receive career counseling and guidance services.

5-b. _____ students will receive career development information during the school year 19 __ - 19 _ .

5-c. _____ percent of the students will indicate career guidance and counseling services as adequate after completion of their vocational program.

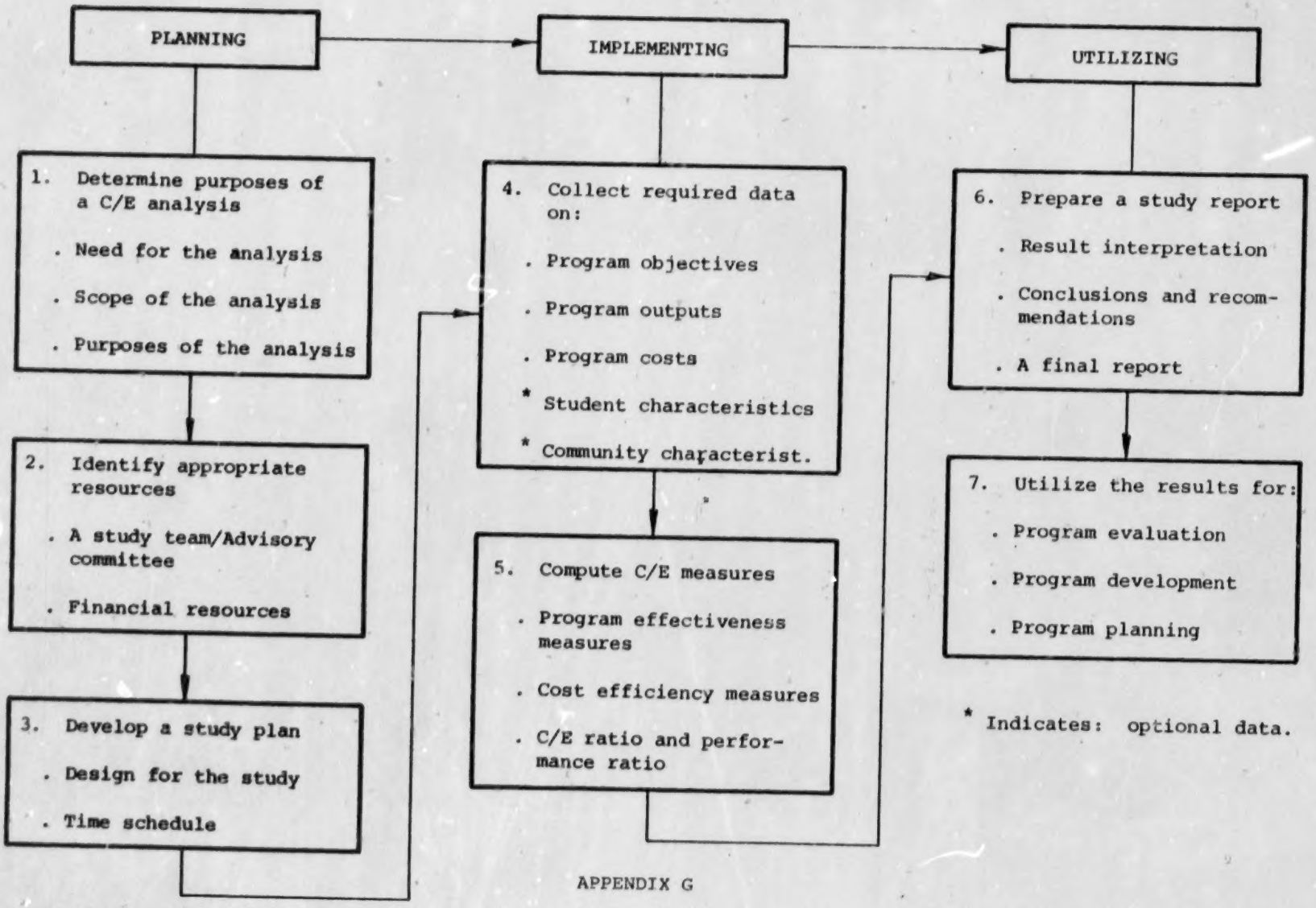
5-d. _____ percent of the students receiving exploratory career information will rate the experience as having influence on their career choice.

OBJECTIVE 6. *Provide vocational programs to fulfill the requirement of the labor markets and the employment community manpower needs.*

6-a. _____ percent of the student completions will be working in the employment community serviced by the school corporation.

6-b. _____ percent of the student completions will seek employment external to the employment community in which they were trained.

6-c. _ _ _ percent of all students will be enrolled in the vocational program that is considered to have high employment community and manpower occupational needs. (Projected)

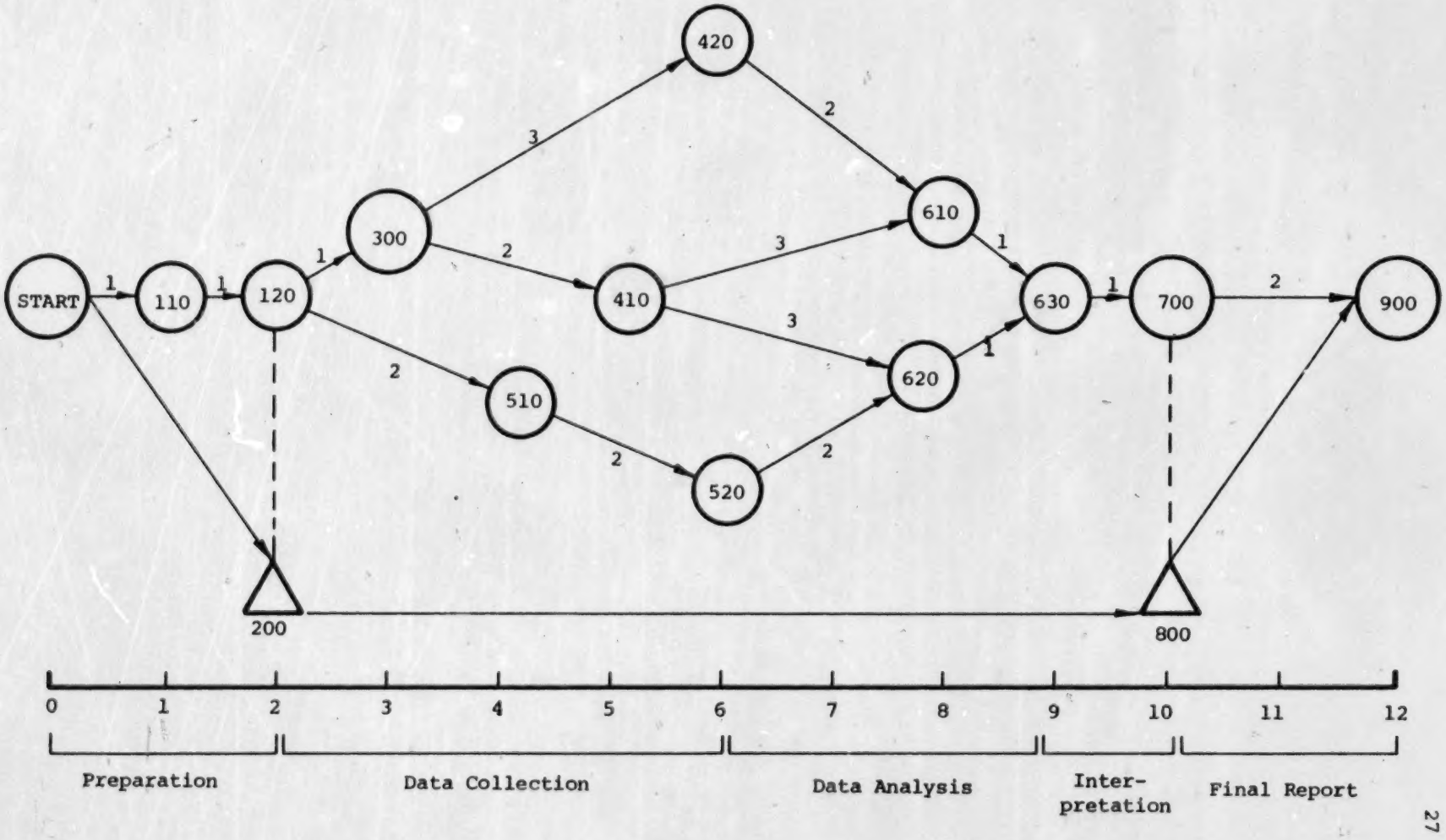


APPENDIX G

PROCEDURE FOR USING THE
COST-EFFECTIVENESS ANALYSIS MODEL

APPENDIX H

NETWORK DIAGRAM FOR COST-EFFECTIVENESS STUDY
AN ILLUSTRATION FOR 12-WEEK SCHEDULE



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